



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,318	12/06/2005	Mats Holmquist	1209-0171PUS2	3205
2292 7590 11/28/2008 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER				
XU, XIAOYUN				
ART UNIT		PAPER NUMBER		
1797				
NOTIFICATION DATE		DELIVERY MODE		
11/28/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/537,318

Applicant(s)

HOLMQUIST ET AL.

Examiner

ROBERT XU

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 7-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-85/86)
Paper No(s)/Mail Date 9/23/2005, 6/2/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-6, drawn to microfluidic arrangement.

Group II, claim(s) 7-19, drawn to microfluidic device.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the common technical feature is a planar microfluidic device which comprises a set of one or more essential equal microchannel structure that are comprised within a common generally planar layer of the device and the microchannel structure comprises an internal microconduit portion in which an active liquid flow is used. This common technical feature is well known in the art, e.g. Clarke et al. (US 2002/0142470) (see 35 in Figure 5 and Figure 6).
3. During a telephone conversation with Toyohiko Konno on 11/19/2008 a provisional election was made with traverse to prosecute the invention of group I, claims 1-6. Affirmation of this election must be made by applicant in replying to this Office

action. Claims 7-19 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 1-5** are rejected under 35 U.S.C. 102(e) as being anticipated by Clarke et al. (US 2002/0142470) (Clarke).

In regard to Claim 1, Clarke discloses a microfluidic arrangement in one of the embodiments (Figure 5). The arrangement comprises

A) microfluidic devices, each of which comprises a set (set I) of essentially equal microchannel structures that are comprised within a planar layer of the device (35 in Figure 5) (layer I) (see paragraph [0024], Figure 5),

each of said microchannel structures comprises an internal microconduit portion in which an active liquid flow is used (see paragraph [0024], Figure 5); and

B) an instrument for processing microfluidic devices, the instrument comprises a spinner motor and a rotary member (see paragraph [0024], Figure 5);

I) the rotary member comprises a group of one or more seats for holding microfluidic devices, each of the seats is capable of

i) being positioned at the same radial distance as any of the other seats of the group (see paragraph [0024], Figure 5),

ii) aligning layer I essentially radially at an angle α relative to the spin plane with $0^\circ < \alpha \leq 90^\circ$ with preference for α being essentially equal to 90° , (see paragraph [0024], lines 1-4, Figure 5), and

iii) preferably positioning the corresponding positions in the microconduit portion of the microchannel structures in any of the microfluidic devices at essentially the same radial distance (see paragraph [0024], Figure 5),

II) the internal microconduit portion has an upstream part that can be positioned at a shorter radial distance than a downstream part when the corresponding microfluidic device is placed in any of the seats (see paragraph [0024], Figure 6).

In regard to Claim 2, Clarke discloses that the arrangement can rotate the micro device seat 180 degree in vertical plane (see paragraph [0024] lines 1-3 in page 4) and 360 degree in horizontal plane (see paragraph [0024], lines 5-6 in page 4). By using predetermined combination of independent rotational movements of both the rotation cog-ring 38 and the $\frac{3}{4}$ spheroid 36, the micro device 35 can be placed in any orientation relative to the g-vector 46 in three dimensions (see paragraph [0024] last 2 lines in page 4, and lines 1-7 in page 5). The combination of independent rotation also adjusts the seats in the radial and/or axial direction (see Figure 5).

In regard to Claim 3, Clarke discloses that the arrangement can hold the seats at a fix radial position (see paragraph [0024], Figure 5).

In regard to Claim 4, Clark discloses that the microfluidic device has two planar surfaces that are parallel to layer I and typically are rectangular with preference fro each device being disc-shaped (see 35 in Figure 5).

In regard to Claim 5, the arrangement disclosed by Clarke can rotate the micro device seat 180 degree in vertical plane (see paragraph [0024] lines 1-3 in page 4).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke in view of Sundberg et al. (US Patent 6,086,825) (Sundberg).

In regard to Claim 6, Clarke discloses a microfluidic device that comprises two essentially planar and parallel opposite sides and edge sides (see 35 in Figure 5, and 6), the microfluidic device has microchannel structure that has an inlet port IP present in an edge side (see Figure 6). Clarke does not specifically teach wettability of the inner walls of the inlet port that permits penetration by self-suction (capillarity) of a predetermined volume of an aqueous liquid. Sundberg discloses microfluidic chip that has fluidic introduction port that uses capillary force to retain the fluid within the port of defined size (see abstract). Sundberg teaches that the port can wick fluid from the surface of a pin, therefore, avoiding the need for complex pipette system (see Col.2, lines 40-52). At time of the invention it would have been obvious to a person of ordinary skill in the art to use a capillary inlet port as disclosed by Sundberg in Clarke's microfluidic chip, in order to avoid the need for complex pipette system.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT XU whose telephone number is (571)270-5560. The examiner can normally be reached on Mon-Thur 7:30am-5:00pm, Fri 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

11/21/2008

/Yelena G. Gakh/
Primary Examiner, Art Unit 1797

RX